2. NON-TECHNICAL ABSTRACT

Cancer of the prostate will affect over 179,000 men this year. Prostate cancer is easily cured if it is caught in its earliest stages, but can be difficult to treat if it spreads and becomes resistant to therapy with anti-hormonal drugs. Every year nearly 37,000 men die of prostate cancer because there are not effective treatments in these late stages. Prostate cancer cells are known to make several proteins that can be measured in the blood. One of these is called prostate-specific antigen, or PSA, and is the most commonly measured protein. This protein is only made by prostate cells and not by normal cells in the body. Recent experiments have shown that PSA can be identified by T-cells in the body when it is made in large quantities, such as when a person has prostate cancer. Vaccines work by stimulating T-cells to recognize and destroy certain proteins. Thus, prostate cancer may be a disease where vaccines can be used to destroy tumor cells.

In order to study vaccine approaches for prostate cancer the gene for human PSA has been inserted into vaccinia virus and fowlpox virus. Vaccinia virus is the vaccine used for the prevention of smallpox and has been given to millions of people around the world. Fowlpox virus is a relative of vaccinia virus and causes infection of birds, but does not cause any disease in humans. However, both viruses stimulate an immune response in humans. Several studies in animals have suggested that using both viruses may result in better immune responses to the tumor antigen (PSA). This approach has not been tested in patients with prostate cancer yet. The vaccinia virus with PSA has been tested in patients with advanced prostate cancer and appears to be safe and long-term outcome is still being followed.

This study proposes to evaluate patients with prostate cancer who have had a tumor removed but now have an elevation of their PSA by blood test and no evidence of tumor by X-ray studies. This group of patients is at high risk for spread of their cancer, but are earlier in the disease when they may be more likely to develop a strong anti-tumor immune response. This study will treat patients randomly with one of three regimens to help determine which option is the best. One regimen will use four vaccinations with the fowlpox-PSA virus alone. The second regiment will use one vaccinia-PSA vaccine followed by three fowlpox-PSA vaccines. The third regime will use three fowlpox-PSA vaccines followed by one vaccinia-PSA vaccine. The responses will be determined by the extent of T-cell immunity measured from a blood test and the influence of the treatment on the PSA level for each patient. This study will be done at several different institutions through the Eastern Cooperative Oncology Group so that more patients can be treated quickly. The institutions chosen have experience in treating cancer patients with biologic agents, such as vaccines.